

Gen. No. 10/781,541
Agree Agree 1/16/07

Docket No.: 2390/491061

AMENDMENTS TO THE SPECIFICATION:

On page 1, after the title, before line 1, please insert the following two (2) paragraphs, including a section heading:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a division of U.S. Patent Application Serial No. 09/109,844, filed on July 2, 1998, which is a division of U.S. Patent Application Serial No. 08/774,970, filed December 26, 1996, and a division of U.S. Patent Application Serial No. 08/774,970, filed December 26, 1996 each of which is expressly incorporated herein in its entirety by reference thereto.--.

1/16/07
Please replace the paragraph beginning on page 37, line ²6 with the following replacement paragraph:

--FIGS. 25 to 28 show a preferred embodiment of an apparatus for fabricating and a stent constructed in accordance with Applicants' invention. The apparatus comprises a laser housing 300, a laser 301, a movable table [[]] 302, and a plurality of stent folders 303 disposed on the table. The laser 301 is disposed within and selectively movable within the housing 300. The movable table 302 has a first end 304 and a second end 305 and is adapted for selective movement into and out of the laser housing 300. The table 302 is adapted so that when the first end 304 of the table 302 is disposed within the laser housing 300 the second end of the table 305 is disposed outside of said housing 300 and when said second end 305 of the table 302 is disposed within the laser housing 300 the first end 304 of the table 302 is disposed outside of the laser housing 300.--.

1/16/07
Please replace the paragraph beginning on page 38, line ⁵9 with the following replacement paragraph:

--A mandrel 309 is provided having a substantially cylindrical external surface 310 and having a first end 311, a second end 312, and a longitudinal axis 313 as shown in FIG. 35. The mandrel 309 is sized to have a cross-sectional diameter substantially equal to or less than the internal diameter of the stent to be fabricated. The platform 307 is provided with a first concave

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recess 314 adapted to receive the first end 311 of the mandrel and a second concave recess 315 adapted to receive the second end 312 of the mandrel 309 as shown in FIG. 36.--

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Please replace the paragraph beginning on page 38, line ¹⁵~~19~~ with the following replacement paragraph:

--A hingedly connected arm [[316]] 376 is adapted for movement in a first direction toward the platform 307 and in a second direction away from the platform 307 for securing the mandrel 309 against a major surface of said flat sheet of metal when it is disposed on the platform; platform.--

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Please replace the paragraph beginning on page 38, line ²⁰~~24~~ with the following replacement paragraph:

--Each stent folder 303 is provided with a first deforming blade 316 provided with a first deforming blade tip [[316]] 316'; a second deforming blade 317 provided with a second deforming blade tip [[317;]] 317'; a third deforming blade 318 provided with a third deforming blade tip [[318;]] 318'; a fourth deforming blade 319 provided with a fourth deforming blade tip [[319;]] 319'; a fifth deforming blade 320 provided with a fifth deforming blade tip [[320;]] 320'; and a sixth deforming blade 321 provided with a sixth deforming blade tip [[321.]] 321'. The blades are disposed around the external surface 310 of the mandrel 309 and are adapted to deform the flat sheet of metal against the external surface 310 of the mandrel 309 so that the flat sheet of metal is deformed into a substantially tubular shape substantially conforming to the external surface 310 of the mandrel 309. The deforming blades are disposed between the first end 311 and the second end 312 of the mandrel 309. Each of the deforming blades is adapted for independent and selective movement in a first direction toward the mandrel 309 and a second direction away from the mandrel so as to selectively impinge the deforming blade tips 316, 317, 318, 319, 320, and 321 316', 317', 318', 319', 320', and 321' against the mandrel or against a portion of the sheet disposed between the mandrel and each of the deforming blade tips. Each of the deforming blades is also adapted so that the first long side and the second long side of the sheet remain substantially parallel to each other when the sheet is deformed into the tubular shape. The third and the sixth deforming blade tips ~~318 and 321~~ 318' and 321' are provided with a plurality of scalloped laser apertures 322 which are sized and disposed to permit the third and the sixth

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deforming blade tips to secure the first long side and the second long side against the external surface of the mandrel while providing the laser 301 access to predetermined portions of the first long side and the second long side in order to weld the first long side to the second long side.--.

AmA
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Please replace the paragraph beginning on page 40, line ²³~~27~~ with the following replacement paragraph:

--Each of the blade deforming tips has a length substantially equal to the first and the second long sides of the flat sheet of metal and in a preferred ~~forming~~ embodiment the blade tips are concave as shown in FIG. 27.--.

AmA
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Please replace the paragraph beginning on page 41, line ⁷~~11~~ with the following replacement paragraph:

--In operation, the apparatus shown in FIGS. 25 to 27 and discussed in detail above is constructed. A plurality of stent patterns is cut into a flat piece of metal, each of the patterns having a first major surface and a second major surface, a first long side and a second long side. The first long side and the second long sides are provided with a plurality of pairs of engagement points 329, 330, 331, and 332, as shown in FIGS. 28 and 29, disposed substantially opposite each other and sized and disposed to communicate when the pattern is deformed and rolled into a tubular shape. Each pair of the first long side engagement points is provided with a bridge 333 disposed between each first long side engagement point 329 and 330 comprising the pair. Preferably, the bridge 333 has a width that is less than the width of the other portions of the stent. The sheet is also provided with a plurality of alignment ~~[[221]]~~ apertures sized and disposed to engage the alignment pins 308 on the base 306.--.

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Please replace the paragraph beginning on page 44, line ⁷~~11~~ with the following replacement paragraph:

--The third and sixth deforming blade motors are then simultaneously activated so that the third and sixth deforming blade motors move the third and sixth deforming blades in the first direction in an amount sufficient for the third and sixth deforming blade tips to contact the first

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major surface of the sheet and deform the sheet against the external surface of the mandrel as shown in FIG. 30I.--.

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Please replace the paragraph beginning on page 44, line ¹⁸22 with the following replacement paragraph:

--In a preferred embodiment, the bridge has a width that is about 25% to about 50% of the width of the other portions of said stent and in an especially ~~prepared~~ preferred embodiment the bridge has a width of about 40 microns.--.

ANA
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Please replace the paragraph beginning on page 46, line ³7 with the following replacement paragraph:

--In a preferred embodiment, the pattern is cut into the sheet using multiple-up-etching and comprises the step of inspecting both sides of the sheet after etching and before the sheet is disposed on the base. In an especially ~~prepared~~ preferred embodiment the inspection step is carried out using an automated optical inspection apparatus.--.

ANA
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Please replace the paragraph beginning on page 46, line ²⁵29 with the following replacement paragraph:

--The first end 404 of the arm is adapted to selectively retain a mandrel 406 having a substantially cylindrical external surface. The second end of the arm 405 is hingedly connected to the base ~~[[405]]~~ 401 and is adapted for movement in a first direction toward the base 401 and in a second direction away from the base 401 to secure the mandrel against a major surface of the flat sheet of metal. The mandrel 406 is sized to have a cross-sectional diameter substantially equal to or less than the internal cross-sectional diameter of the stent to be fabricated.--.

ANA
11/16/07

Please replace the paragraph beginning on page 48, line ⁴8 with the following replacement paragraph:

--The stent aligning and welding jig shown in FIGS. 41 to 45 comprises a base 500 having a first end and a second end provided with a first wall 501 having a first end and a second end and a first major surface 502 and a second major surface 503 and a second wall 504 having a first end and a second end and a first major surface 505 and a second major surface 506. The second major surface 503 of the first wall 501 and the first major surface 505 of the second wall 504 define a longitudinal U-shaped channel 507 having a longitudinal axis in the base 500. The first wall 501 is provided with a plurality of slots 508 defining a plurality of first clamping portions ~~[[504]]~~ 509 having a top end 511 and a bottom end 512 and a first major surface 502 and a second major surface 503. Each of the first clamping portions 509 is provided with a first concave channel 510 disposed at the top end 511 of the second major surface 503 of the first clamping portion 509 and a second concave channel 513 disposed at the bottom end 512 of the second major surface 503 of the first clamping portion 509. The first and the second concave channels 510 and 513 are substantially parallel to the longitudinal axis of the U-shaped channel. ~~The first wall 502~~ second major surface 503 of each of the plurality of first clamping portions is also provided with a compensation slit 514 disposed between the first concave channel 510 and the second concave channel 513 substantially parallel to the longitudinal axis of the U-shaped channel 507.--.

AQA 11/16/07 Please replace the paragraph beginning on page 49, line ²~~6~~ with the following replacement paragraph:

--A plurality of second clamping portions 515 is disposed in the U-shaped channel 507 between the second major surface 503 of the first wall 501 and the first major surface 505 of the second wall 504. Each of the second clamping portions 515 is disposed in registry with one of the first clamping portions 509. Each of the second clamping portions 515 has a top end 516, a bottom end 517, a first major surface 518, a second major surface 519, a first minor surface disposed at the top end, a second minor surface disposed at the bottom end, a third minor surface disposed between the top end and the bottom end ~~520~~, and a fourth minor surface disposed opposite the third minor surface between the top end 516 and the bottom end 517. Each of the second clamping portions 515 is provided with a first concave channel 521 disposed at the top end 516 of the first major surface 518 of the second clamping portion 515 and a second concave channel 522 disposed at the bottom end 517 of the first major surface 518 of the second clamping

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portion 515. The first and the second concave channels 521 and 522 are substantially parallel to the longitudinal axis of the U-shaped channel.--

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Please replace the paragraph beginning on page 50, line ¹~~5~~ with the following replacement paragraph:

--A first mandrel support lever positioning pin ~~[[520]]~~ 524 projects from the third minor surface 520 and a second mandrel support lever positioning pin 521 projects from the fourth minor surface of each of the second clamping portions 515. The mandrel support lever positioning pins 524 and 521 are substantially parallel to the longitudinal axis of the U-shaped channel.--

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Please replace the paragraph beginning on page 50, line ⁷~~11~~ with the following replacement paragraph:

--A biasing control means 522 selectively controls the distance between the second major surface 503 of each of the first clamping portions 509 and the first major surface 518 of each of the second clamping portions 515.--

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Please replace the paragraph beginning on page 50, line ¹¹~~15~~ with the following replacement paragraph:

--A retaining mandrel 523 is disposed in the second concave channel 513 of the first wall 501 and the second concave channel 522 in each of the second clamping portions 515.--

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Please replace the paragraph beginning on page 50, line ¹⁴~~18~~ with the following replacement paragraph:

--A mandrel support lever 534, as shown in FIG. 42, supports the stent during the alignment of the first long side of the sheet with the second long side of the sheet. The lever ~~[[524]]~~ 534 is provided with a first mandrel support notch 525 for supporting the first end of the mandrel and a second mandrel support notch 526 for supporting the second end of the mandrel.

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A first mandrel support lever positioning pin engagement surface 527 engages the first mandrel support lever positioning pin 524 and a second mandrel support lever positioning pin engagement surface 528 engages the second mandrel support lever positioning pin when the mandrel support lever is disposed on the second wall.--.

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Please replace the paragraph beginning on page 51, line ³7 with the following replacement paragraph:

--In a preferred embodiment the biasing control means 522 is a threaded screw disposed in each of the first clamping portions 509 with each of the screws 522 communicating with the first major surface 502 and the second major surface 503 of each of the first clamping portions 509. The screws 522 are selectively movable in a direction toward and away from the first major surface 518 of the second clamping portion 515 to selectively move the second clamping portion 515 in a direction toward and away from the first clamping portions ~~[[501]]~~ 509 to selectively vary the distance between the second major surface 503 of each of the first clamping portions 509 and the first major surface 518 of each of the second clamping portions 515.--

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Please replace the paragraph beginning on page 52, line ⁵9 with the following replacement paragraph:

--FIGS. 46 to 48 show a jig 612 for electropolishing a tubular stent, comprising a rack 600 having a first end 601 and a second end 602 and provided with a plurality of stent electropolishing mounts 603. Each of the mounts is provided with a base 604 and an electrically conductive first member 605 having a first end 606 connected to the base and a second end 607 adapted to selectively contact the external surface of the tubular stent to be electropolished without damaging its external surface. The mounts are also provided with an electrically non-conductive second member 608 having a first end 609 connected to the base and a second end 610 adapted to be selectively disposed within the longitudinal bore of the stent without damaging the surface defining the longitudinal bore. The first member and the second member are also adapted so as to bias the second end of the second member towards the second end of said first member in an amount sufficient to secure said stent between said first and said second members. The advantage of a mount constructed in accordance with applicants' invention is that the electrically conductive member ~~controls~~ contacts the external surface of the stent. This

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reduces the likelihood of undulations and erosion lines occurring on the surface defining the longitudinal bore. These erosion lines frequently occur in stents electropolished utilizing conventional mounts which place the electrically conductive member against the surface defining the longitudinal bore. Electropolishing a stent with Applicants' mount reduces the likelihood that the longitudinal lumen of the stent will have an irregular surface which could result in turbulent fluid flow which could result in thrombosis or platelet aggregation.--.

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Please replace the paragraph beginning on page 54, line ⁵9 with the following replacement paragraph:

--Pieces of sacrificial material 611 may be added at the first end and the second end of the rack to compensate for the additional material normally removed from stents disposed at the first end and the second end of the rack as shown in FIG. 48. The material is selected and added in an amount sufficient to substantially equalize the amount of additional material normally removed from the stents disposed first and second ends of the rack.--.

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Please delete the paragraph beginning on page 54, line ²⁶30.

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Please delete the paragraph beginning on page 56, line ⁴8.